



Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-333



LHA 6 America Class Amphibious Assault Ship (LHA 6)

As of FY 2019 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

~~This document contains information that may be exempt from mandatory disclosure under the FOIA.~~

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Sensitivity Originator

Organization: PEO SHIPS - PMS377

Organization Email:

Organization Phone: 202-781-5240

Common Acronyms and Abbreviations for MDAP Programs

Acq O&M - Acquisition-Related Operations and Maintenance
ACAT - Acquisition Category
ADM - Acquisition Decision Memorandum
APB - Acquisition Program Baseline
APPN - Appropriation
APUC - Average Procurement Unit Cost
\$B - Billions of Dollars
BA - Budget Authority/Budget Activity
Blk - Block
BY - Base Year
CAPE - Cost Assessment and Program Evaluation
CARD - Cost Analysis Requirements Description
CDD - Capability Development Document
CLIN - Contract Line Item Number
CPD - Capability Production Document
CY - Calendar Year
DAB - Defense Acquisition Board
DAE - Defense Acquisition Executive
DAMIR - Defense Acquisition Management Information Retrieval
DoD - Department of Defense
DSN - Defense Switched Network
EMD - Engineering and Manufacturing Development
EVM - Earned Value Management
FOC - Full Operational Capability
FMS - Foreign Military Sales
FRP - Full Rate Production
FY - Fiscal Year
FYDP - Future Years Defense Program
ICE - Independent Cost Estimate
IOC - Initial Operational Capability
Inc - Increment
JROC - Joint Requirements Oversight Council
\$K - Thousands of Dollars
KPP - Key Performance Parameter
LRIP - Low Rate Initial Production
\$M - Millions of Dollars
MDA - Milestone Decision Authority
MDAP - Major Defense Acquisition Program
MILCON - Military Construction
N/A - Not Applicable
O&M - Operations and Maintenance
ORD - Operational Requirements Document
OSD - Office of the Secretary of Defense
O&S - Operating and Support
PAUC - Program Acquisition Unit Cost

PB - President's Budget
PE - Program Element
PEO - Program Executive Officer
PM - Program Manager
POE - Program Office Estimate
RDT&E - Research, Development, Test, and Evaluation
SAR - Selected Acquisition Report
SCP - Service Cost Position
TBD - To Be Determined
TY - Then Year
UCR - Unit Cost Reporting
U.S. - United States
USD(AT&L) - Under Secretary of Defense (Acquisition, Technology and Logistics)

Program Information

Program Name

LHA 6 America Class Amphibious Assault Ship (LHA 6)

DoD Component

Navy

Responsible Office

Mr. Thomas Rivers
Program Executive Office, Ships
Amphibious Warfare Program Office
1333 Isaac Hull Avenue
Washington, DC 20376-2101

(b)(6)

Date Assigned: September 28, 2015

(b)(6)

References

SAR Baseline (Development Estimate)

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated January 12, 2006

Approved APB

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated October 20, 2016

Mission and Description

The LHA(R) Program replaces the Tarawa Class (LHA 1) Amphibious Assault Ships and the retiring Wasp Class (LHD 1) Amphibious Assault Class Ships.

The LHA (R) will be the key platform in the Expeditionary Strike Group (ESG)/Amphibious Ready Group (ARG) of the future and will provide the Joint Force Commander options to project expeditionary power. The LHA 6 America Class, the first ship of the LHA (R) Program, will embark and support all of the Short Take-off Vertical Landing (STOVL) and Vertical Take-off Landing Marine expeditionary aviation assets in the ESG/ARG, including the MV-22 and the F-35B, the STOVL model of the Joint Strike Fighter. The LHA 6 America Class is an LHD 8 gas turbine variant with enhanced aviation capability. The Flight 0 ship will embark over 1,600 Marines and transport them and their equipment ashore by rotary-wing aircraft when the situation requires. The Flight I ship maintains an aviation centric capability with the addition of a well deck that will accommodate two Landing Craft, Air Cushion. The Flight I ship will embark over 1,400 Marines and transport them and their equipment ashore by rotary-wing or surface connector.

Executive Summary

Program Highlights Since Last Report

The LHA (R) program completed another successful year, with each of the three ships of the LHA (R) Program achieving significant milestones.

LHA 6 supported F-35B Developmental Testing-III to demonstrate Joint Strike Fighter interoperability in November 2016. In February 2017, LHA 6 successfully conducted Operational Testing C3 (OT-C3) test period which included Low Slow Flyer and Surface Warfare events as well as the completion of Combat System Ship Qualification Trials events. Additionally, Cybersecurity Operational Test and Evaluation completed in March 2017 and Live Fire Test and Evaluation Total Ship Survivability testing and PHIBRON-Marine Expeditionary Unit Integration completed in April 2017. Pre-deployment work-ups (OT-C4) completed in June 2017 and the ship deployed in July 2017. Operational Evaluation Complete was successfully achieved on December 26, 2017 with the completion of Probability of Raid Annihilation modeling and simulations.

LHA 7 (TRIPOLI) continued sustained production at Huntington Ingalls Industries (HII), Ingalls Shipbuilding Division, in Pascagoula, Mississippi. LHA 7 completed its translation and integration of Super Modules 1, 2 and the Deckhouse. Module Integration began in June 2016, three months ahead of schedule, which is an indication that construction continued ahead of schedule. The ship was successfully launched on May 1, 2017, three months ahead of the program baseline schedule. TRIPOLI's Christening Ceremony was held on September 16, 2017. LHA 7 continues to be on schedule for the December 2018 contract delivery date.

LHA 8 (BOUGAINVILLE) contract for Planning, Advanced Engineering and Procurement of Long Lead Time Material (LLTM) with option for Detail Design and Construction (DD&C) was awarded to HII on June 30, 2016. The second increment of advanced procurement of LLTM was added to the contract on October 3, 2016. The contract option for execution of DD&C of LHA 8 was awarded on June 16, 2017. Detail Design continues leading up to a Production Readiness Review in April 2018 and start of sustained production in October 2018.

LHA 9 is targeted as an FY 2024 ship. \$191.9M in advance procurement funds have been included in the FYDP in FY 2023.

There are no significant software-related issues with this program at this time.

History of Significant Developments Since Program Initiation

History of Significant Developments Since Program Initiation	
Date	Significant Development Description
March 2001	Mission Need Statement for the LHA (R) program was approved by JROC.
September 2002	Analysis of Alternatives was completed.
February 2005	CDD was validated by JROC. Subsequent validations/revalidations occurred which added Survivability and Force Protection KPPs in December 2005.
January 2006	Milestone B was completed. The ADM was signed and the LHA 6 contract was awarded in June 2007.
May 2012	The LHA 7, a repeat of the LHA 6 design configuration with fact of life updates for equipment obsolescence, Detail Design and Construction (DD&C) contract was awarded to Huntington Ingalls Industries(HII) Ingalls Shipbuilding in May 2012. LHA 7 began sustained production on July 15, 2013 and the Keel Laying Ceremony was held on June 20, 2014. A contract modification was awarded in October 2014 to incorporate flight deck strengthening and other design changes necessary for the F-35B as part of the initial production rather than after delivery as discussed on LHA 6 above. This contract modification included a six month schedule extension, with a revised delivery date of December 4, 2018.
February 2014	The LHA (R) CDD was updated to include LHA (R) Flight 1 capabilities. These include the reincorporation of the well deck, increased vehicle stowage square footage, provide for a surface connector lift capability, and to increase overall operational flexibility.
April 2014	On April 10, 2014 HII successfully delivered the LHA 6 to the Navy, marking the completion of the first ship in the LHA (R) program. The ship completed its post-delivery availability efforts on July 10, 2014 and commenced transit to her homeport of San Diego on July 11, 2014. During the transit, the LHA 6 traveled 15,300 miles on their journey around South America. Port visits included Colombia, Guantanamo Bay, Cuba, Brazil, and Peru. Various exercises and operations with foreign navies helped to bolster cooperative maritime security and partnerships. Additional training evolutions throughout the transit strengthened the crew's readiness and understanding of the ship's systems and capabilities. LHA 6 arrived in San Diego on September 15, 2014 and was commissioned on October 11, 2014 in San Francisco, CA. After completing Fitting Out Availability, Final Contract Trials and Post Shakedown Availability the ship was transferred to the Fleet in March 2016 and achieved IOC.
May 2016	The LHA (R) program's delegation was changed from ACAT ID to ACAT IC.
June 2016	On June 30, 2016, HII was awarded the contract for Planning, Advanced Engineering and Procurement of Long Lead Time Material (LLTM) with option for DD&C. The second increment of Advanced Procurement of LLTM was added to the contract on October 3, 2016. The contract option for the execution of DD&C of LHA 8 was awarded on June 16, 2017.
July 2017	LHA 6 (USS AMERICA) is the first new construction ship with full F-35B capability, Cornerstone and Environmental Effect alterations. She completed her Initial Operational Test and Evaluation in Q4 FY 2017 and deployed as the centerpiece of the AMERICA Amphibious Ready Group/Marine Expeditionary Unit.

Threshold Breaches

APB Breaches

Schedule		<input type="checkbox"/>
Performance		<input type="checkbox"/>
Cost	RDT&E	<input type="checkbox"/>
	Procurement	<input type="checkbox"/>
	MILCON	<input type="checkbox"/>
	Acq O&M	<input checked="" type="checkbox"/>
O&S Cost		<input type="checkbox"/>
Unit Cost	PAUC	<input type="checkbox"/>
	APUC	<input type="checkbox"/>

Explanation of Breach

Cost Breach of Acq O&M is an artificial breach due to system rounding in DAMIR. The total O&M,N budget for the LHA (R) program is TY\$2.36M or BY06 \$1.95M, which is under the threshold in the current approved APB of BY06 \$2.1M.

Nunn-McCurdy Breaches

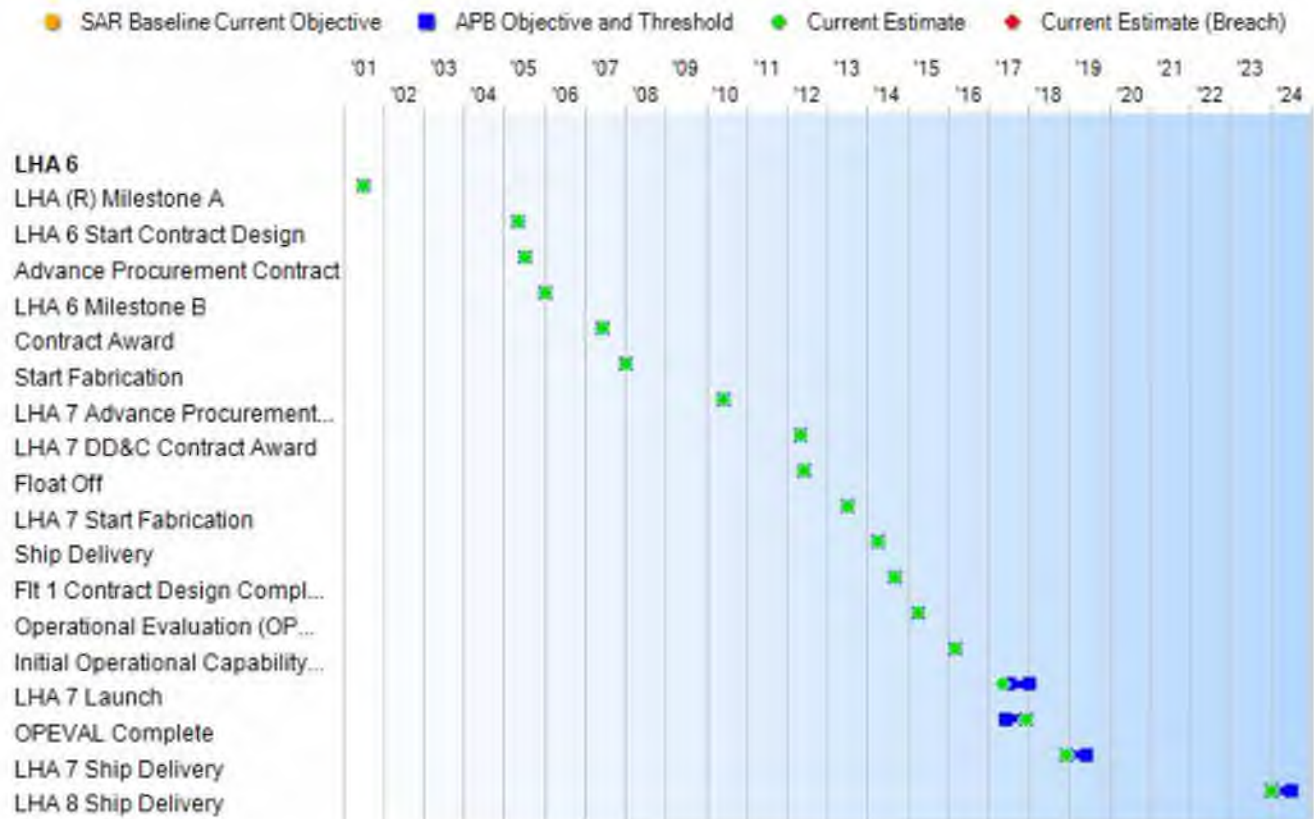
Current UCR Baseline

PAUC	None
APUC	None

Original UCR Baseline

PAUC	None
APUC	None

Schedule



Schedule Events				
Events	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate
LHA (R) Milestone A	Jul 2001	Jul 2001	Jul 2001	Jul 2001
LHA 6 Start Contract Design	May 2005	May 2005	May 2005	May 2005
Advance Procurement Contract	Jul 2005	Jul 2005	Jul 2005	Jul 2005
LHA 6 Milestone B	Jan 2006	Jan 2006	Jan 2006	Jan 2006
Contract Award	Dec 2006	Jun 2007	Jun 2007	Jun 2007
Start Fabrication	Nov 2007	Jan 2008	Jan 2008	Jan 2008
LHA 7 Advance Procurement Contract Award	N/A	Jun 2010	Jun 2010	Jun 2010
LHA 7 DD&C Contract Award	N/A	May 2012	May 2012	May 2012
Float Off	Aug 2010	Jun 2012	Jun 2012	Jun 2012
LHA 7 Start Fabrication	N/A	Jul 2013	Jul 2013	Jul 2013
Ship Delivery	Dec 2011	Apr 2014	Apr 2014	Apr 2014
Flt 1 Contract Design Complete	N/A	Sep 2014	Sep 2014	Sep 2014
Operational Evaluation (OPEVAL) Start	Aug 2012	Apr 2015	Apr 2015	Apr 2015
Initial Operational Capability (IOC)	Sep 2013	Mar 2016	Mar 2016	Mar 2016
LHA 7 Launch	N/A	Jul 2017	Jan 2018	May 2017
OPEVAL Complete	Sep 2013	Jun 2017	Dec 2017	Dec 2017
LHA 7 Ship Delivery	N/A	Dec 2018	Jun 2019	Dec 2018
LHA 8 Ship Delivery	N/A	Jan 2024	Jul 2024	Jan 2024

(Ch-1)

Change Explanations

(Ch-1) OPEVAL Complete current estimated changed from June 2017 to December 2017 to reflect the actual OPEVAL Completion date.

Acronyms and Abbreviations

DD&C - Detail Design and Construction
 Flt - Flight

Performance

Performance Characteristics				
SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Demonstrated Performance	Current Estimate
Net Ready				
100% of interfaces; services; policy-enforcement controls; and data correctness, availability and processing requirements in the joint integrated architecture	100% of interfaces; services; policy-enforcement controls; and data correctness, availability and processing requirements in the joint integrated architecture	100% of interfaces; services; policy-enforcement controls; and data correctness, availability and processing requirements designated as enterprise level or critical in the joint integrated architecture	LHA 6 has partially met the Net Ready KPP per Joint Interoperability Test Command Certification letter of January 23, 2018.	LHA 6 has partially met the Net Ready KPP per Joint Interoperability Test Command Certification letter of January 23, 2018.
Vertical Take Off and Landing land/launch spots				
9 CH-53E/MV-22	9 CH-53E/MV-22	(T=O) 9 CH-53E/MV-22	9 CH-53E/MV-22	9 CH-53E/MV-22
F-35B capacity				
23 Aircraft	23 Aircraft	20 Aircraft	TBD	23 Aircraft
Aviation operations				
6 Spots 12 hrs/day (Sustained) 6 Spots 24 hrs/day for six consecutive days (Surge)	6 Spots 10 hrs/day 12 hrs/day of flight quarters to support 10 hrs/day of flight operations	(T=O) 6 Spots 10 hrs/day 12 hrs/day of flight quarters to support 10 hrs/day of flight operations	6 spots 10 hrs/day 12 hrs/day of flight quarters to support 10 hrs/days of flight operations	6 spots 10 hrs/day 12 hrs/day of flight quarters to support 10 hrs/day of flight operations
Vehicles Flt 0 (sq. ft.)				
12,000 sq. ft.	12,000 sq. ft.	10,000 sq. ft.	12,055 sq. ft.	12,055 sq. ft.
Vehicles Flt 1 (sq. ft.)				
N/A	16,000 sq. ft.	(T=O) 16,000 sq. ft.	TBD	16,000 sq. ft.
Total Manpower Flt 0 (includes Ship's Force and all embarked elements such as troops, staffs, detachments, etc.)				
2,891 Persons	2,891 Persons	2,831 Persons	2,891 Persons	2,891 Persons
Total Manpower Flt 1 (Includes Ship's Force and all embarked elements: troops, staffs, detachments, etc.)				
N/A	2,666 (1,204 Navy + 1,462 Troop)	(T=O) 2,666 (1,204 Navy + 1,462 Troop)	TBD	2,666 (1,204 Navy + 1,462 Troop)
Cargo (cu. ft.)				

(Ch-2)

(Ch-1)

(Ch-1)

160,000 cu. ft.	160,000 cu. ft.	130,000 cu. ft.	155,153 cu. ft.	155,153 cu. ft.	(Ch-1)
Troop Accommodations Flt 0					
1,686 Persons	1,686 Persons	1,626 Persons	1,686 Persons	1,686 Persons	
Troop Accommodations Flt 1					
N/A	1,462 Persons	(T=O) 1,462 Persons	TBD	1,462 Persons	
Survivability: Navy Survivability Policy for Surface Ships					
Equals threshold, implement recommendations of the NAVSEA USS COLE Survivability Review Group Phase II Analysis Report of Amphibious Ships, April 2003	In addition to threshold, implement recommendations of the NAVSEA COLE Survivability Review Group Phase II Analysis Report of Amphibious Ships, April 2003	Level II per OPNAV-INST 9070.1 of September 23, 1988 (LHA(R)) cargo magazine protection as stated in para. 6.b.17 of the CDD	T-plus some Cole Survivability Review Group mods - Validated during Total Ship Survivability Test - awaiting report.	Equals threshold, implement recommendations of the NAVSEA COLE Survivability Review Group Phase II Analysis Report of Amphibious Ships, April 2003	
Force Protection: Collective Protection System (CPS)					
Expanded CBR protection that provides a toxic-free environment (where it is not necessary to wear protective clothing or masks) for 40% of crew in berthing, messing, sanitary, and battle dressing facilities as well as key operational spaces that can be affordably integrated into ship design	Expanded CBR protection that provides a toxic-free environment (where it is not necessary to wear protective clothing or masks) for 40% of crew in berthing, messing, sanitary, and battle dressing facilities as well as key operational spaces that can be affordably integrated into ship design	CBR protection that provides a toxic-free environment (where it is not necessary to wear protective clothing or masks) for 40% of crew in berthing, messing, sanitary, and battle dressing facilities	CBR protection that provides a toxic-free environment (where it is not necessary to wear protective clothing or masks) for 40% of crew in berthing, messing, sanitary, and battle dressing facilities	CBR protection that provides a toxic-free environment (where it is not necessary to wear protective clothing or masks) for 40% of crew in berthing, messing, sanitary, and battle dressing facilities	
Force Protection: Decontamination Stations					
Four decontamination stations (two CPS, one casualty, and one conventional) providing a capability of decontamination an avg of ten people per hr per station	Four decontamination stations (two CPS, one casualty, and one conventional) providing a capability of decontamination an avg of ten people per hr per station	(T=O) Four decontamination stations (two CPS, one casualty, and one conventional) providing a capability of decontamination an avg of ten people per hr per station	Four decontamination stations (two CPS, one casualty, and one conventional) providing a capability of decontamination an avg of ten people per hr. per station	Four decontamination stations (two CPS, one casualty, and one conventional) providing a capability of decontamination an avg of ten people per hr. per station	

Classified Performance information is provided in the classified annex to this submission.

Requirements Reference

CDD dated February 26, 2014

Change Explanations

(Ch-1) Revised Current Estimate to equal Demonstrated Performance.

(Ch-2) Updated Demonstrated Performance and revised Current Estimate to equal Demonstrated Performance.

Acronyms and Abbreviations

avg - average

CBR - Chemical, Biological, and Radiological

cu - cubic

etc. - etcetera

Flt - Flight

ft. - feet

hr. - hour

hrs - hours

INST. - Instruction

JITC - Joint Interoperability Test Command

NAVSEA - Naval Sea Systems Command

O - Objective

OPNAV - Office of the Chief of Naval Operations

sq. - square

T - Threshold

Track to Budget

RDT&E

Appn	BA	PE	
Navy	1319	04	0603564N
	Project	Name	
	0408	Ship Preliminary Design & Feasibility Studies/Ship Development (Shared) (Sunk)	
Navy	1319	05	0604567N
	Project	Name	
	2465	Ship Contract Design/Live Fire T&E	
	9235	Ship Contract Design/Live Fire Test & Evaluation/LHA (R) DESIGN (Shared) (Sunk)	
	9236	Ship Contract Design/Live Fire Test & Evaluation/LHA(R) DESIGN (Shared) (Sunk)	
	9999	Congressional Add (Sunk)	

Procurement

Appn	BA	PE
Navy	1611	03 0204411N
	Line Item	Name
	3041	LHA Replacement
	Notes:	LHA Replacement End Cost
Navy	1611	05 0204411N
	Line Item	Name
	5110	Outfitting (Shared)
	5300	Completion of Prior Year Shipbuilding Programs (Shared)
	Notes:	Budget realigned to line item 3041 during year of execution.

Notes

FY 2018 SCN sub-activity Cost To Complete for LHA 7 appropriation will transfer into SCN sub-activity 3041 in the year of execution.

Acq O&M

Appn	BA	PE	
Navy	1804	01	0204411N
Subactivity Group		Name	
1C6C		Combat Support Forces	
Notes: LHA(R) TADTAR			

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 2006 \$M			BY 2006 \$M	TY \$M		
	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate	SAR Baseline Development Estimate	Current APB Development Objective	Current Estimate
RDT&E	199.9	408.1	448.9	423.8	197.5	447.6	467.2
Procurement	2677.5	8025.6	8828.2	8199.6	2896.0	10539.0	10787.4
Flyaway	--	--	--	8199.6	--	--	10787.4
Recurring	--	--	--	8199.6	--	--	10787.4
Non Recurring	--	--	--	0.0	--	--	0.0
Support	--	--	--	0.0	--	--	0.0
Other Support	--	--	--	0.0	--	--	0.0
Initial Spares	--	--	--	0.0	--	--	0.0
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	1.9	2.1	2.5 ¹	0.0	1.9	2.6
Total	2877.4	8435.6	N/A	8625.9	3093.5	10988.5	11257.2

¹ APB Breach

Current APB Cost Estimate Reference

Program Office Estimate (POE) for the LHA 8 dated May 09, 2016

Cost Notes

In accordance with Section 842 of the National Defense Authorization Act for FY 2017, which amended title 10 U.S.C. § 2334, the Director of Cost Assessment and Program Evaluation, and the Secretary of the military department concerned or the head of the Defense Agency concerned, must issue guidance requiring a discussion of risk, the potential impacts of risk on program costs, and approaches to mitigate risk in cost estimates for MDAPs and major subprograms. The information required by the guidance is to be reported in each SAR. This guidance is not yet available; therefore, the information on cost risk is not contained in this SAR.

Total Quantity			
Quantity	SAR Baseline Development Estimate	Current APB Development	Current Estimate
RDT&E	0	0	0
Procurement	1	3	3
Total	1	3	3

Cost and Funding

Funding Summary

Appropriation Summary									
FY 2019 President's Budget / December 2017 SAR (TY\$ M)									
Appropriation	Prior	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	To Complete	Total
RDT&E	371.9	8.2	6.8	9.9	5.9	6.1	6.2	52.2	467.2
Procurement	8663.8	1740.1	57.7	11.4	0.0	0.0	191.9	122.5	10787.4
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	1.4	0.2	0.2	0.2	0.2	0.2	0.2	0.0	2.6
PB 2019 Total	9037.1	1748.5	64.7	21.5	6.1	6.3	198.3	174.7	11257.2
PB 2018 Total	9037.0	1748.3	49.0	23.8	6.3	6.4	52.9	127.2	11050.9
Delta	0.1	0.2	15.7	-2.3	-0.2	-0.1	145.4	47.5	206.3

Quantity Summary										
FY 2019 President's Budget / December 2017 SAR (TY\$ M)										
Quantity	Undistributed	Prior	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	To Complete	Total
Development	0	0	0	0	0	0	0	0	0	0
Production	0	3	0	0	0	0	0	0	0	3
PB 2019 Total	0	3	0	0	0	0	0	0	0	3
PB 2018 Total	0	3	0	0	0	0	0	0	0	3
Delta	0	0	0	0	0	0	0	0	0	0

Cost and Funding

Annual Funding By Appropriation

Annual Funding							
1319 RDT&E Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2001	--	--	--	--	--	--	15.2
2002	--	--	--	--	--	--	4.9
2003	--	--	--	--	--	--	38.1
2004	--	--	--	--	--	--	52.9
2005	--	--	--	--	--	--	43.0
2006	--	--	--	--	--	--	21.6
2007	--	--	--	--	--	--	12.9
2008	--	--	--	--	--	--	10.9
2009	--	--	--	--	--	--	7.6
2010	--	--	--	--	--	--	8.7
2011	--	--	--	--	--	--	10.0
2012	--	--	--	--	--	--	20.4
2013	--	--	--	--	--	--	24.3
2014	--	--	--	--	--	--	76.5
2015	--	--	--	--	--	--	7.1
2016	--	--	--	--	--	--	8.3
2017	--	--	--	--	--	--	9.5
2018	--	--	--	--	--	--	8.2
2019	--	--	--	--	--	--	6.8
2020	--	--	--	--	--	--	9.9
2021	--	--	--	--	--	--	5.9
2022	--	--	--	--	--	--	6.1
2023	--	--	--	--	--	--	6.2
2024	--	--	--	--	--	--	8.0
2025	--	--	--	--	--	--	15.6
2026	--	--	--	--	--	--	20.4
2027	--	--	--	--	--	--	4.2
2028	--	--	--	--	--	--	2.0
2029	--	--	--	--	--	--	2.0
Subtotal	--	--	--	--	--	--	467.2

Annual Funding							
1319 RDT&E Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	BY 2006 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2001	--	--	--	--	--	--	16.6
2002	--	--	--	--	--	--	5.3
2003	--	--	--	--	--	--	40.7
2004	--	--	--	--	--	--	55.0
2005	--	--	--	--	--	--	43.5
2006	--	--	--	--	--	--	21.2
2007	--	--	--	--	--	--	12.4
2008	--	--	--	--	--	--	10.3
2009	--	--	--	--	--	--	7.1
2010	--	--	--	--	--	--	8.0
2011	--	--	--	--	--	--	8.9
2012	--	--	--	--	--	--	17.9
2013	--	--	--	--	--	--	21.1
2014	--	--	--	--	--	--	65.7
2015	--	--	--	--	--	--	6.0
2016	--	--	--	--	--	--	6.9
2017	--	--	--	--	--	--	7.8
2018	--	--	--	--	--	--	6.6
2019	--	--	--	--	--	--	5.4
2020	--	--	--	--	--	--	7.7
2021	--	--	--	--	--	--	4.5
2022	--	--	--	--	--	--	4.5
2023	--	--	--	--	--	--	4.5
2024	--	--	--	--	--	--	5.7
2025	--	--	--	--	--	--	11.0
2026	--	--	--	--	--	--	14.1
2027	--	--	--	--	--	--	2.8
2028	--	--	--	--	--	--	1.3
2029	--	--	--	--	--	--	1.3
Subtotal	--	--	--	--	--	--	423.8

Annual Funding 1611 Procurement Shipbuilding and Conversion, Navy							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2005	--	149.2	--	--	149.2	--	149.2
2006	--	350.1	--	--	350.1	--	350.1
2007	1	1131.1	--	--	1131.1	--	1131.1
2008	--	1365.8	--	--	1365.8	--	1365.8
2009	--	190.7	--	--	190.7	--	190.7
2010	--	169.3	--	--	169.3	--	169.3
2011	1	937.6	--	--	937.6	--	937.6
2012	--	1942.1	--	--	1942.1	--	1942.1
2013	--	173.6	--	--	173.6	--	173.6
2014	--	66.0	--	--	66.0	--	66.0
2015	--	65.6	--	--	65.6	--	65.6
2016	--	489.2	--	--	489.2	--	489.2
2017	1	1633.5	--	--	1633.5	--	1633.5
2018	--	1740.1	--	--	1740.1	--	1740.1
2019	--	57.7	--	--	57.7	--	57.7
2020	--	11.4	--	--	11.4	--	11.4
2021	--	--	--	--	--	--	--
2022	--	--	--	--	--	--	--
2023	--	191.9	--	--	191.9	--	191.9
2024	--	101.3	--	--	101.3	--	101.3
2025	--	21.2	--	--	21.2	--	21.2
Subtotal	3	10787.4	--	--	10787.4	--	10787.4

Annual Funding 1611 Procurement Shipbuilding and Conversion, Navy							
Fiscal Year	Quantity	BY 2006 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2005	--	141.6	--	--	141.6	--	141.6
2006	--	321.0	--	--	321.0	--	321.0
2007	1	991.6	--	--	991.6	--	991.6
2008	--	1157.9	--	--	1157.9	--	1157.9
2009	--	156.9	--	--	156.9	--	156.9
2010	--	134.6	--	--	134.6	--	134.6
2011	1	722.3	--	--	722.3	--	722.3
2012	--	1464.2	--	--	1464.2	--	1464.2
2013	--	128.5	--	--	128.5	--	128.5
2014	--	48.0	--	--	48.0	--	48.0
2015	--	46.9	--	--	46.9	--	46.9
2016	--	343.6	--	--	343.6	--	343.6
2017	1	1127.1	--	--	1127.1	--	1127.1
2018	--	1178.5	--	--	1178.5	--	1178.5
2019	--	38.3	--	--	38.3	--	38.3
2020	--	7.4	--	--	7.4	--	7.4
2021	--	--	--	--	--	--	--
2022	--	--	--	--	--	--	--
2023	--	117.8	--	--	117.8	--	117.8
2024	--	60.9	--	--	60.9	--	60.9
2025	--	12.5	--	--	12.5	--	12.5
Subtotal	3	8199.6	--	--	8199.6	--	8199.6

Cost Quantity Information:

The AP funding for LHA 9 has been included in the end item cost for LHA 8 since there is no quantity for LHA 9, as it is targeted to be a 2024 ship. This is increasing the base year cost of LHA 8 by approximately \$118 BY06\$M.

Cost Quantity Information 1611 Procurement Shipbuilding and Conversion, Navy		
Fiscal Year	Quantity	End Item Recurring Flyaway (Aligned With Quantity) BY 2006 \$M
2005	--	--
2006	--	--
2007	1	2835.8
2008	--	--
2009	--	--
2010	--	--
2011	1	2542.0
2012	--	--
2013	--	--
2014	--	--
2015	--	--
2016	--	--
2017	1	2821.8
2018	--	--
2019	--	--
2020	--	--
2021	--	--
2022	--	--
2023	--	--
2024	--	--
2025	--	--
Subtotal	3	8199.6

Annual Funding 1804 Acq O&M Operation and Maintenance, Navy		
Fiscal Year	TY \$M	
	Total Program	
2010		0.2
2011		0.2
2012		0.2
2013		0.1
2014		0.1
2015		0.2
2016		0.2
2017		0.2
2018		0.2
2019		0.2
2020		0.2
2021		0.2
2022		0.2
2023		0.2
Subtotal		2.6

Annual Funding 1804 Acq O&M Operation and Maintenance, Navy		
Fiscal Year	BY 2006 \$M	
	Total Program	
2010		0.2
2011		0.2
2012		0.2
2013		0.1
2014		0.1
2015		0.2
2016		0.2
2017		0.2
2018		0.2
2019		0.2
2020		0.2
2021		0.2
2022		0.2
2023		0.1
Subtotal		2.5

Due to the rounding function in DAMIR, the system is causing the APPN to breach the threshold. The total O&M,N budget for the LHA (R) program is TY\$2.36M or BY06 \$1.95M.

Low Rate Initial Production

There is no LRIP for this program.

Foreign Military Sales

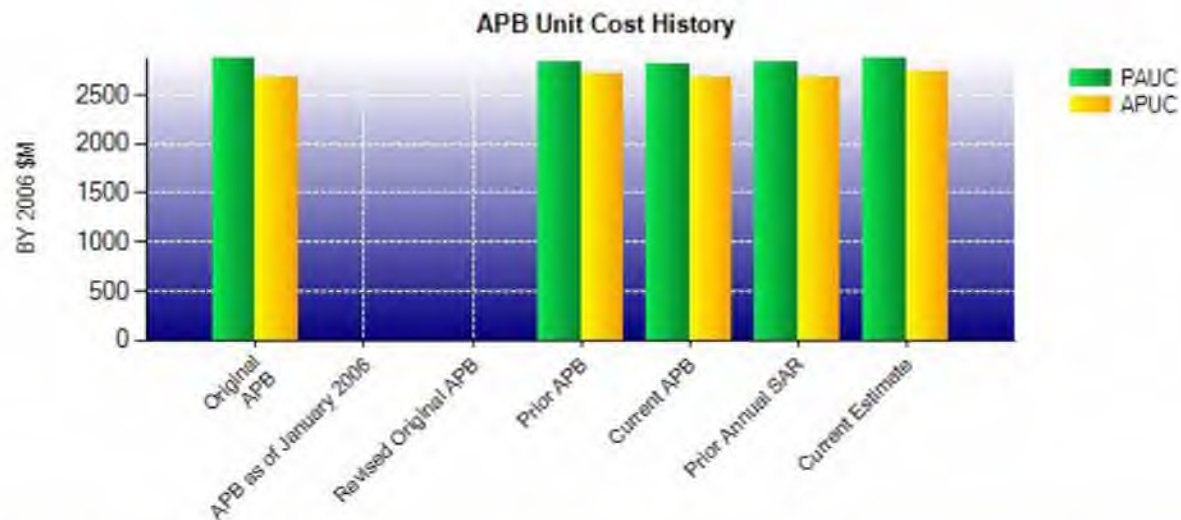
None

Nuclear Costs

None

Unit Cost

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2006 \$M	BY 2006 \$M	% Change
	Current UCR Baseline (Oct 2016 APB)	Current Estimate (Dec 2017 SAR)	
Program Acquisition Unit Cost			
Cost	8435.6	8625.9	
Quantity	3	3	
Unit Cost	2811.867	2875.300	+2.26
Average Procurement Unit Cost			
Cost	8025.6	8199.6	
Quantity	3	3	
Unit Cost	2675.200	2733.200	+2.17
Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2006 \$M	BY 2006 \$M	% Change
	Original UCR Baseline (Jan 2006 APB)	Current Estimate (Dec 2017 SAR)	
Program Acquisition Unit Cost			
Cost	2877.4	8625.9	
Quantity	1	3	
Unit Cost	2877.400	2875.300	-0.07
Average Procurement Unit Cost			
Cost	2677.5	8199.6	
Quantity	1	3	
Unit Cost	2677.500	2733.200	+2.08



APB Unit Cost History					
Item	Date	BY 2006 \$M		TY \$M	
		PAUC	APUC	PAUC	APUC
Original APB	Jan 2006	2877.400	2677.500	3093.500	2896.000
APB as of January 2006	N/A	N/A	N/A	N/A	N/A
Revised Original APB	N/A	N/A	N/A	N/A	N/A
Prior APB	May 2012	2831.550	2710.450	3402.450	3281.700
Current APB	Oct 2016	2811.867	2675.200	3662.833	3513.000
Prior Annual SAR	Dec 2016	2824.800	2682.900	3683.633	3527.133
Current Estimate	Dec 2017	2875.300	2733.200	3752.400	3595.800

SAR Unit Cost History

Current SAR Baseline to Current Estimate (TY \$M)									
PAUC Development Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
3093.500	259.967	566.566	3.133	19.500	-280.933	90.667	0.000	658.900	3752.400

Current SAR Baseline to Current Estimate (TY \$M)									
Initial APUC Development Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2896.000	260.367	698.233	3.133	0.000	-352.600	90.667	0.000	699.800	3595.800

SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate
Milestone A	N/A	Jul 2001	N/A	Jul 2001
Milestone B	N/A	Jan 2006	N/A	Jan 2006
Milestone C	N/A	N/A	N/A	N/A
IOC	N/A	Sep 2013	N/A	Mar 2016
Total Cost (TY \$M)	N/A	3093.5	N/A	11257.2
Total Quantity	N/A	1	N/A	3
PAUC	N/A	3093.500	N/A	3752.400

Cost Variance

Summary TY \$M					
Item	RDT&E	Procurement	MILCON	Acq O&M	Total
SAR Baseline (Development Estimate)	197.5	2896.0	--	--	3093.5
Previous Changes					
Economic	-0.8	+816.5	--	--	+815.7
Quantity	--	+7886.7	--	--	+7886.7
Schedule	--	+9.4	--	--	+9.4
Engineering	+58.5	--	--	--	+58.5
Estimating	+212.1	-1299.2	--	+2.2	-1084.9
Other	--	+272.0	--	--	+272.0
Support	--	--	--	--	--
Subtotal	+269.8	+7685.4	--	+2.2	+7957.4
Current Changes					
Economic	-0.3	-35.4	--	-0.1	-35.8
Quantity	--	--	--	--	--
Schedule	--	--	--	--	--
Engineering	--	--	--	--	--
Estimating	+0.2	+241.4	--	+0.5	+242.1
Other	--	--	--	--	--
Support	--	--	--	--	--
Subtotal	-0.1	+206.0	--	+0.4	+206.3
Total Changes	+269.7	+7891.4	--	+2.6	+8163.7
Current Estimate	467.2	10787.4	--	2.6	11257.2

Summary BY 2006 \$M					
Item	RDT&E	Procurement	MILCON	Acq O&M	Total
SAR Baseline (Development Estimate)	199.9	2677.5	--	--	2877.4
Previous Changes					
Economic	--	--	--	--	--
Quantity	--	+6142.3	--	--	+6142.3
Schedule	--	-33.3	--	--	-33.3
Engineering	+49.5	--	--	--	+49.5
Estimating	+174.2	-987.5	--	+2.1	-811.2
Other	--	+249.7	--	--	+249.7
Support	--	--	--	--	--
Subtotal	+223.7	+5371.2	--	+2.1	+5597.0
Current Changes					
Economic	--	--	--	--	--
Quantity	--	--	--	--	--
Schedule	-0.1	--	--	--	-0.1
Engineering	--	--	--	--	--
Estimating	+0.3	+150.9	--	+0.4	+151.6
Other	--	--	--	--	--
Support	--	--	--	--	--
Subtotal	+0.2	+150.9	--	+0.4	+151.5
Total Changes	+223.9	+5522.1	--	+2.5	+5748.5
Current Estimate	423.8	8199.6	--	2.5	8625.9

Previous Estimate: December 2016

RDT&E	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-0.3
Schedule variance to align with updated test dates for the F-35 on the LHA 6. (Schedule)	-0.1	0.0
Revised estimate to reflect Navy Working Capital Fund and purchase rate inflation adjustments. (Estimating)	+0.2	+0.1
Adjustment for current and prior escalation. (Estimating)	+0.1	+0.1
RDT&E Subtotal	+0.2	-0.1

Procurement	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-35.4
Revised estimate to reflect rephasing LHA 8 Outfitting and Post Delivery requirements. (Estimating)	-0.6	0.0
Revised estimate to reflect the updated LHA 7 cost to complete. (Estimating)	+16.6	+25.1
Revised estimate to reflect updated Outfitting and Post Delivery requirements for LHA 7. (Estimating)	-7.2	-11.1
Revised estimate to include the Advance Procurement funds for LHA 9, currently targeted as an FY 2024 ship. (Estimating)	+117.8	+191.9
Adjustment for current and prior escalation. (Estimating)	+23.1	+33.5
Revised estimate due to application of new outyear inflation indices. (Estimating)	+1.2	+2.0
Procurement Subtotal	+150.9	+206.0

Acq O&M	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-0.1
Revised estimate to include an additional year of acquisition support funding for LHA 8 construction. (Estimating)	+0.1	+0.2
Refined estimate to reflect minor adjustments. (Estimating)	+0.3	+0.3
Acq O&M Subtotal	+0.4	+0.4

(U//FOUO) Contracts**Contract Identification**

Appropriation: Procurement
Contract Name: LHA 7 Detail Design & Construction Contract (DD&C)
Contractor: Huntington Ingalls Incorporated
Contractor Location: 1000 Access Road
Pascagoula, MS 39567
Contract Number: N00024-10-C-2229
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: June 30, 2010
Definitization Date: May 31, 2012

(b)(4)

Contract Identification

Appropriation: Procurement
Contract Name: LHA 8 Detail Design and Construction Contract (DD&C)
Contractor: Huntington Ingalls Incorporated
Contractor Location: 1000 Access Road
Pascagoula, MS 39567-4485
Contract Number: N00024-16-C-2427/1
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: June 30, 2016
Definitization Date: June 30, 2017

(b)(4)

Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	0	0	0	--
Production	3	1	3	33.33%
Total Program Quantity Delivered	3	1	3	33.33%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	11257.2	Years Appropriated	18
Expended to Date	6316.4	Percent Years Appropriated	62.07%
Percent Expended	56.11%	Appropriated to Date	10785.6
Total Funding Years	29	Percent Appropriated	95.81%

The above data is current as of February 12, 2018.

The planned delivery to date was increased to three ships due to the Detail Design and Construction option of the LHA 8 contract being awarded in June 2017.

Operating and Support Cost

Cost Estimate Details

Date of Estimate:	May 09, 2016
Source of Estimate:	POE
Quantity to Sustain:	3
Unit of Measure:	Ship
Service Life per Unit:	40.00 Years
Fiscal Years in Service:	FY 2017 - FY 2064

The LHA (R) program is currently comprised of the LHA 6, LHA 7 and LHA 8 ships. LHA 6 was delivered to the Navy in April 2014. LHA 7 is under construction, and the Advanced Procurement and the Detail Design of LHA 8 has commenced.

The intent is to estimate the normal costs of O&S the ship in typical peacetime operations. Additional costs that might be incurred under wartime operating scenarios are not included. Potential costs of currently unplanned and unknown future upgrades or configuration changes are assumed to occur in the same proportion as modernization work that has occurred on the LHD 1 ship class. Nominal OPTEMPO is assumed to be 2700 hours steaming underway and 1200 hours steaming not underway, based on the fuel burn rates and time profiles provided by the LHA 6 design team.

Sustainment Strategy

The LHA (R) sustainment strategy includes the use of commercial shipyards for depot maintenance in concert with Organizational (O) and Intermediate (I) level maintenance strategies. Existing shore support and infrastructure will be used to the maximum extent possible. Life cycle cost savings are anticipated from fuel savings realized from the propulsion system and Manpower savings expected from operations and maintenance of the Gas Turbine engines.

Antecedent Information

The antecedent system designated for LHA (R) program is LHD 1. LHD 1 Unitized O&S Costs (BY 2006 \$M) reflect the Operating and Support Cost Analysis Model (OSCAM) historical average dataset for LHD 1. Visibility and Management of Operating and Support Costs (VAMOSC) data reflects average O&S return data for active ships (LHD1-7) between FY 1992 and FY 2016. Open Architecture Retrieval System (OARS) 3-M data includes the years FY 2001 through FY 2016. Like the LHA (R) program Unitized O&S Costs, antecedent costs reflect a 40 year life cycle. Projected manning includes approximately 24 fewer officer and 55 fewer enlisted personnel than the average historical manning on LHD 1-7. However, FY 2006 Military Pay Rates utilized to estimate Personnel are approximately 12 percent higher than the average LHD 1-7 historical rates, which were inflated to FY 2006. Therefore, Unit Level Personnel costs do not reflect expected savings due to reduction in crew size. If personnel rates were normalized, it would show an approximate 10 percent savings when compared to the antecedent class. The discrepancy between historical rates and the FY 2006 set could be driven in part by actual crews being manned with lower ranking personnel than that assumed in the baseline estimate. For comparative purposes, the FY 2006 cost per barrel of Diesel Fuel, Marine (DFM) was substituted for the historical average cost of DFM observed in LHD 1 class data. This methodology better aligns LHD 1 historical requirements for Unit Operations with estimated requirements. In line with LHA (R) Maintenance requirements, antecedent Maintenance costs reflect requirements laid out in the Office of the Chief of Naval Operations (OPNAV) 4700.

Annual O&S Costs BY2006 \$M		
Cost Element	LHA 6 Average Annual Cost Per Ship	LHD 1 (Antecedent) Average Annual Cost Per Ship
Unit-Level Manpower	68.694	71.983
Unit Operations	12.102	18.910
Maintenance	31.178	34.882
Sustaining Support	8.997	9.276
Continuing System Improvements	9.749	8.978
Indirect Support	40.464	45.227
Other	0.000	0.000
Total	171.184	189.256

Item	Total O&S Cost \$M			
	LHA 6			LHD 1 (Antecedent)
	Current Development APB Objective/Threshold	Current Estimate		
Base Year	20542.0	22596.2	20542.0	22710.8
Then Year	38382.5	N/A	38382.5	0.0

Equation to Translate Annual Cost to Total Cost

Total O&S Cost = 3 Ships X 40 Service Life X \$171.184M Average Annual Cost Per Ship = \$20,542.0M.

O&S Cost Variance		
Category	BY 2006 \$M	Change Explanations
Prior SAR Total O&S Estimates - Dec 2016 SAR	20542.0	
Programmatic/Planning Factors	0.0	
Cost Estimating Methodology	0.0	
Cost Data Update	0.0	
Labor Rate	0.0	
Energy Rate	0.0	
Technical Input	0.0	
Other	0.0	
Total Changes	0.0	
Current Estimate	20542.0	

Disposal Estimate Details

Date of Estimate: May 09, 2016
Source of Estimate: POE
Disposal/Demilitarization Total Cost (BY 2006 \$M): Total costs for disposal of all Ship are 28.6

The CG class of ship was determined by the Naval Sea Systems Command (NAVSEA) Inactive Ships Program Office (PMS 21I) as most comparable to the LHA 7 out of those vessels historically disposed of by NAVSEA. The decision to use the CG class of ships was based upon the comparison of warship compartmentalization, hazardous materials to remove and hull weight, influenced by scrap metal commodity prices.